

SCIENCE & GOVERNMENT REPORT

25th Year of Publication

The Independent Bulletin of Science Policy

Volume XXV, No. 20

P. O. Box 6226A, Washington, D. C. 20015

© December 15, 1995

It Was a Bad Year for Science, With Worse to Come

Whatever the outcome of the budget conflict between the White House and Congress, the first year of the Republican Revolution goes into the record books as the most damaging in decades for the academic and government sectors of the scientific community. Industrial research suffered, too, both from the decline in federal spending and from a self-initiated retreat from research.

The saving grace is that the American research enterprise is still so large, diverse, and resilient that it remains highly productive even as its finances decline and politics intrudes on its independence. But this is just the beginning of the big Republican drive—now endorsed by the Clinton Administration—to reduce government spending en route to a balanced budget by the year 2002. Growth is gone, moderate to drastic shrinkage has begun, and by all the vows that Congress can summon up, far worse is on the way.

Ironically, as the process proceeds, both sides speak

ideologies, it represents unwarranted government intrusion into the marketplace.

In a rare departure from its budget slicing, Congress actually voted to increase military R&D by 6 percent. The boost, however, was accompanied by a directive for the Pentagon to stick strictly to military research, with emphasis on weapons development. Defense support for basic and applied research would be essentially unchanged.

The levels of government funding for much of academic basic research remains uncertain because money bills that include NSF and NIH are still incomplete two and a half months into the fiscal year. At this point, it appears that NSF will come out a bit behind last year, while NIH may be a bit ahead. But until their appropriations bills become law, the two agencies are operating on continuing resolutions, which

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lovingly of research, even as they legislate its decline. Responding to allegations of indifference to science and technology, the President has recently provided several sops for the S&T pleaders, including in August his first visit to the nearby National Institutes of Health, a longed-for event in scientific circles, which naively equate royal visits with political support.

At the urgings of his despairing Science and Technology Assistant, John Gibbons, he also wrote a letter to Senate Minority Leader Thomas Daschle asking for protection of R&D budgets. But many of Clinton's proposals for research are only a trifle less worse than the Republicans'.

The fiscal punishment inflicted on the government's science and technology programs varies among agencies. But, with the exception of defense R&D, the numbers are level or down. At the extremes of the new policymaking, Congress has decreed elimination of the industry-focused Advanced Technology Program (ATP) financed by the National Institute of Standards and Technology, thus eliminating a planned \$490 million from the R&D economy. The Pentagon's own industrial-aid program, the Technology Reinvestment Project (TRP), was cut from a requested \$500 million down to \$195 million. With civilian high-tech industry far larger than the still-shrinking military sector, TRP aimed to promote so-called dual-use research to meet civilian and military needs.

The dual-use concept traces back to defense planners in the Bush Administration. But for the reigning Republican

In Brief

Budget Bombast. "The President's 7-year balanced budget plan....makes a high priority of investing in science and technology," the White House announced on December 7, stating that the budget "adds funds for biomedical and behavioral research at NIH" and for basic research at NSF and NASA. "How much does it add?" SGR asked the apparatchik who dispatched the report. Mock-startled response: "Numbers? You want numbers? There are no numbers."

NIH is pondering the anti-halo effect on NIH grant applicants who are also financed by the bountiful Howard Hughes Medical Institute, the world's richest private philanthropy. A report on this touching phenomenon notes that NIH study sections have given low scores to projects they've rated scientifically outstanding "because the investigator's laboratory was very well funded from HHMI or other sources." For scientific purposes, the report states, NIH co-funding may nonetheless be appropriate, and might be provided by reviving the practice of making "grants-in-aid." The report, "NIH Interactions with Howard Hughes Medical Institute Scientists," is available without charge: tel. 301/594-4499; fax 301/480-1852.

Indebtedness of over \$100,000 is the expectation of a majority of students in the Harvard Medical School class of 1998, according to a report in Focus, newsletter of the Harvard medical, dental and public health schools.

Machine translation? From a statement issued November 30 by NSF Director Neal Lane: "We in the scientific community have much work to do to ensure that, in planning for America's future, we do not jeopardize by insufficient federal investment in science and technology the future we gain by eliminating the deficit."

... Appropriation Delays Depress Spending Levels

(Continued from Page 1)

require them to throttle back their spending to levels below those of fiscal 1995, which ended on September 30. NSF says it is holding its expenditures down to 75 percent of 1995, while NIH is running at 95 percent.

NIH Director Harold Varmus told a meeting of his advisors last week that the NIH budget would have to rise from the present \$11.3 billion to \$15 billion in 2002 just to keep up with inflation. But the House-Senate budget conference, he said, has it going the other way, with spending in 2002 scheduled to decline to two-thirds of the present amount.

Grantees have been notified, Varmus said, that NIH cannot provide the customary 4 percent annual inflation increase in granted dollars. Budget planning for fiscal 1997, which should now be at an advanced stage, is befogged by uncertainty about 1996, Varmus said. Normally, the next budget is pretty well completed late in the year for presentation to Congress in January or February. Now there's a good deal of talk of a full year on continuing resolutions for NIH, NSF, and other agencies.

Basic research programs in the Department of Energy have retained level spending, but huge reductions have been made in virtually all other DOE research programs. And while debate and politicking continue over the future of DOE's laboratory empire, the fact is that the staffs are slowly dwindling and the labs' long-term future is grim.

While the damage to the research enterprise is most easily measured in financial terms, the assault on spirit and independence must also be taken into account. Federal employees have been an object of intense public abuse ever since Ronald Reagan rode into office on an anti-government platform. The last few years, however, have probably been the saddest for public service, with the hostile rhetoric accompanied by substantial staff reductions and menacing reports of more to come.

The first year of the new Republican rule on Capitol Hill has produced an impressive casualty list, starting with the Congressional Office of Technology Assessment, which was abolished as a demonstration of power and antipathy to the old order. The Bureau of Mines has also been voted out of existence. And, in effect, the same fate has been inflicted on the National Biological Service, which has been "defunded" and made a part of the US Geological Survey.

The social sciences, always suspect in right-wing political circles, were threatened with ouster from NSF by the Chairman of the Foundation's law-writing committee in the House, Rep. Robert Walker (R-Pa.). Walker left them quaking for a while over his allegations of "political correctness" in research, and then magnanimously relented, expressing surprise over the "fuss" he had stirred in social-science research circles. But with that cautionary warning shot, Chairman Walker signaled his preferences to the timorous Foundation.

The interlaced nature of the research enterprise means

that declines in government spending and loss of jobs ripple out to academe and industry. In the latter category, a boom in high-tech startups has produced job opportunities for new graduates and displaced researchers. But the downsizing pattern continues in major high-tech firms, while hiring freezes and staff reductions are commonplace in universities. Meanwhile, the leaders of the science establishment have been ineffectively stumbling around Washington, assuring each other that research is essential to the nation's wellbeing and therefore must surely be appreciated by politics and the public.

The latest manifestation of helplessness is a loudly touted report from the National Academy of Sciences, commissioned by Congress and a year in preparation, *Allocating Federal Funds for Science and Technology* [SGR, December 1], which claims to be a prescription for keeping science thriving in difficult times. In reality, it is an acquiescence to the great gods of deficit reduction.

With touching innocence, the Academy report argues that the budget definitions should be rewritten to show that federal spending on science and technology is actually only \$35 billion to \$40 billion out of the \$70 billion or so that's conventionally referred to as research and development. The underlying assumption may be that it's easier to get more when you have less, but it's doubtful that Congressional appropriators will loosen up from a mere change of definitions.

The report also says that unworthy programs should be eliminated in favor of worthy ones, a process linked to another proposal, namely that the White House should roll all S&T into one budget statement for presentation to Congress, which would look and then, as usual, disperse the pieces to various committees.

Left unexamined is that things are the way they are in science politics, pork, and priorities because the powers that be in Congress like it that way, and are not drawn to policy prescriptions that reduce their benefits or fail to advance their ideological preferences.

The distinguished committee that wrote the Academy report, chaired by former Academy President Frank Press,

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Published by Science & Government Report, Inc., twice monthly, except once each in January, July, August, and September. Annual subscriptions: Institutions, \$490.00 (two years, \$840.00). Bulk and individual rates upon request. Editorial offices at 3736 Kanawha St. NW, Washington, DC 20015. Tel. (202) 244-4135. For subscription service: PO Box 6226A, Washington, DC 20015. Tel. 1-800-522-1970; in Washington, DC 785-5054. Reproduction without permission is prohibited. SGR is available on University Microfilms International. Claims for missing back issues will be filled without charge if made within six weeks of publication date. ISSN 0048-9581.

Immigration Changes Heading for Passage in 1996

None of the various legislative bills that would affect the immigration of scientists and engineers into the United States will make it through the crowded Congressional agenda this year. But after extensive hearings in the House and Senate, and intense lobbying concerning authorized levels and criteria of entry, it's widely expected that 1996 will be the year of enactment.

Lower numbers for skilled immigrants appear likely, though how low is not yet clear, nor is much else certain on the economically and emotionally contentious issue of immigration policy.

The provisions affecting scientists and engineers are just part of the debate over what's referred to as legal immigration, a process that currently allots 140,000 slots per year for employment-based immigration out of an admissions total of 799,500 that is otherwise based on family relations and refugee criteria. The employment category stood at 54,000 until 1990, when Congress, responding to panicky warnings of shortages of scientists and engineers, raised the level to 130,000 skilled admissions, plus 10,000 unskilled.

In the Senate, the leading contender is the "Immigration Reform Act" (S 1394), introduced by Senator Alan Simpson (R-Wyoming). It would reduce the skilled quota to 90,000 annually, approximately the number that has actually been coming in. The quota for temporary admissions for work purposes (H-1B visas) would remain at the current 65,000.

To discourage the importation of workers to undercut prevalent salary levels, Simpson's bill would require employers to pay immigrants 105 percent of the prevailing US wages. Universities would be required to seek US citizens first for job openings, and an English proficiency standard would be established for foreign employees.

Approved by the Senate Judiciary Subcommittee on Immigration, Simpson's bill had still not gone to the full committee last week, where it is likely to be amalgamated with legislation on illegal immigration (S 269).

The House is well along with its own bill, "Immigration in the National Interest Act" (HR 2202), introduced by Rep. Lamar Smith (R-Texas), which has been approved by the

Looking Back at '95

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can claim in its defense that the assignment from Congress called for a proposal to make do with existing budgets. But the mark of excellence in the report-writing industry in Washington is to assert your conclusions in the guise of fulfilling the patron's assignment.

If carried out, the seven-year deficit-elimination timetable toward which the White House and Congress are moving would devastate the scientific enterprise. Whole institutions would have to be shut down and unemployment among scientists and engineers would soar. The leaders of the science establishment recognize that the future is bleak. So far, their response does not match the danger.—DSG

Visas Linked to Firings

The volatile phenomenon of immigration into a soft job market has evoked harsh testimony at Congressional hearings on immigration legislation. The following is from a statement in September to the Senate Subcommittee on Immigration by Lawrence Richards, Executive Director of the Software Professionals' Political Action Committee, based in Austin, Texas, and claiming about 100 members in 15 states.

The large number of immigrants employed in high-tech companies is an indication, not of a lack of American talent, but of the rubber stamp nature of the labor certification process for high-tech immigrants.... The fact that 30 percent of the engineers employed in the Silicon Valley are immigrants proves nothing about the need for immigrants in high-tech fields. Were we to use this logic, then the fact that 40 percent of our nation's motels are owned by Indian immigrants would imply that this nation's motel business would not exist without immigration.....

In case after case, US programmers are being fired so that companies can replace them with lower paid foreign programmers here on "guest worker" visas.... That American companies can replace their current workers with lower paid foreign workers in our own country is outrageous, but unfortunately, perfectly legal. No one in the Department of Labor is checking....

Judiciary Committee but not yet moved to the floor. Smith's bill would set the employment category at 135,000, but limit it to skilled workers, which would work out to an increase over the current quota. The H-1B category would remain unchanged, at 65,000.

Except in spot circumstances, critics assert, the warned-of shortages of scientists and engineers never materialized, while the increased flow of immigrants into an increasingly soft job market, they insist, worsened the plight of US-citizen graduates. Not so, says the principal advocate of generous skilled-immigration quotas, high-tech industry, which contends that the foreigners—whether trained abroad or in American universities—are needed to make up for a shortfall in homegrown talent.

Starting with the pre-World War II flight of scientists and engineers to the US, foreigners have enriched American science and technology far beyond the capacity of domestic output. While acknowledging the past, opponents of the wide-open door argue that the current influx is both superfluous and discourages native-born students from pursuing S&T training. A new theme in the anti-immigration argument is that the foreign tide has an especially negative effect on minority students.

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... University Spokesman Doubts PhD Oversupply

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Professional societies, particularly in engineering, charge that employers covet immigrants because they can get them at lower cost—an allegation that is stoutly denied, though there's a good deal of evidence to support it.

University organizations, desirous of imported professorial superstars and the enrollments and revenues of foreign students in a lagging domestic market, are also supporting generous and fuss-free immigration standards, and with only a modest trickle of crocodile tears for their jobless graduates.

Speaking in behalf of the Association of American Universities, the American Council on Education, and several other major educational associations, David Auston, Provost of Rice University, spelled out the academic position in September to the Senate Subcommittee on Immigration.

Contending that "it is not at all clear that there is in fact an oversupply of PhDs," Auston said that "while there are concerns about the slowdown in the academic job market, they are offset by the strength of demand from industry and other sectors." He added, "Both the National Academy of Sciences and the National Science Foundation have reported that unemployment of doctorate-level scientists remains under 2 percent." His testimony did not refer to reports from professional societies of far higher unemployment and substantial underemployment.

These reports on the job market are almost uniformly gloomy. And the latest job survey of mathematicians is especially so: *1995 Annual AMS-IMS-MAA Survey* (16 pp., no charge; order from: Joint Policy Board for Mathematics, 1529 18th St. NW, Washington, DC 20036; tel. 202/234-9570; fax 202/462-7877; e-mail <jpbm@math.umd.edu>).

As reported in the December *Notices of the American Mathematical Society*, the survey found that "The unemployment rate for new doctoral recipients reached the highest level ever reported. Among those whose employment status is known, 14.7 percent were unemployed as of late September 1995, surpassing the previous record high figure of 14.2 percent in fall 1994 and the record high for previous decades of 13.7 percent in 1975."

The mathematics report adds that an additional 4.2 percent of the 1994-95 doctoral recipients reported part-time employment.

Physicists are having a difficult time, too, though the published data on their plight is a bit stale, dating back to 1993. As reported in the October 1995 *Physics Today*, data compiled by the American Institute of Physics (AIP) shows that 16 percent of physicists were unemployed at least six months after receiving their PhD degrees and 32 percent were working parttime or in temporary jobs.

With managed health-care undercutting the job market for physicians, the Washington lobby for medical schools, the Association of American Medical Colleges, parts with the rest of academe on foreign-trained graduates. Rather than reduce the number or output of American schools in

response to a looming oversupply, the Association says curbs should be placed on immigration.

The difficult job market has spawned several organizations of concerned scientists, particularly young ones, including one that calls itself the Network of Emerging Scientists (NES), self-described as "an Internet forum (nes@aip.org) of scientists and engineers working toward positive change in science employment, policy, and education."

Citing data from the American Institute of Physics, the Chief Editor of the *NES Digest*, Jennifer M. Cohen, formerly at the Los Alamos National Laboratory, states that the unemployment rate for women physicists is twice that of similarly qualified men. "The reality is that there is no shortage of qualified physicists in the United States," Cohen states, adding that "Females should be aware that while they might hear we need more women in physics, the job market and some employers might have different ideas."

At the National Academy of Sciences and the White House Office of Science and Technology policy, the policy mandarins keep spouting off optimistically about "alternative" employment in industry and elsewhere sopping up the PhD numbers beyond academe's requirements. With industry and government in a downsizing spiral, there's no basis for these hallucinations about job opportunities. Nonetheless, they keep coming.

What's evident from recently available data is that foreign-born scientists and engineers make up a far larger proportion of the American R&D population than is generally realized. The existing group, in fact, is so large that it's clearly indispensable for running academe and industry, though the need for a continued influx is a separate matter.

The large foreign-born presence in US science and technology is outlined in a new report from the National Science Foundation, *Data Brief No. 15* (2 pp., no charge, order from: NSF, Division of Science Resources Studies, Arlington, Va. 22230; tel. 703/306-1773; fax 703/644-4278.)

Defining "immigrants" and "foreign-born" as those born outside the US to parents who were not US citizens at the time, NSF reports that immigrants comprise 9.8 percent of the bachelor's degree holders in science and engineering in the US and 23 percent of the doctorates. In research and development employment, the foreign doctorates comprise an impressive 28 percent of the national total.

The report points out that foreign-born PhDs—whether educated in the US or abroad—are a well-established, and growing, element of American science and technology. For all age groups up to 65, immigrants account for 20 percent of the doctorates, and 28.4 percent in the 31-35 age category.

Unless the job market for scientists and engineers improves, and there's nothing in sight to indicate that it will, the pressures will mount for curbs on immigration. The leading bills in the House and Senate call for relatively modest changes. Waiting in the wings are several that would impose drastic reductions.

Gene Therapy 'Oversold,' Study Group Advises NIH

The efficacy of gene therapy has been "oversold" by enthusiastic researchers and parroting journalists, and both groups should pipe down while research gets back to basics and away from repetitions of failed trials.

That was the message delivered last week by a panel appointed in May by NIH Director Harold Varmus, who appeared to agree with what he heard as the glamorous, highly publicized field was skewered at a meeting of the Advisory Committee to the Director of NIH.

The report, confined to somatic gene therapy, said the \$200 million a year that NIH now spends on research in this

with increased emphasis on gathering scientific data, both positive and negative. At the same time, it said, researchers should get back to basics, particularly in enlarging understanding of vectors for delivering genes to cells and of host responses. Among the failings noted was "the relative dearth of well-controlled studies of appropriate and sustained gene expression following somatic gene transfer into animals."

The gene-therapy review was also critical of NIH's inhouse ventures into the trendy field. While only 1 percent of extramural funds are assigned to gene therapy, the report, stated, the intramural allocation stands at 5 percent, with little attention to coordination and avoidance of duplication. Institute directors were urged to "resist the temptation to fill the 'portfolio' with research that appears 'hot' but may lack a strong scientific basis or likelihood of success relative to other areas."

The biotechnology industry got a lashing, too, with the report warning that progress in gene therapy "is at risk to the extent that the premature initiation of clinical studies and overzealous, uncritical reports of clinical results are used by industry to promote investment and perceived research dominance."

"Likewise," it continued, "if the objectivity and integrity of academic investigators associated with specific companies is undermined as they seek to maintain their industrial ties, the field will be jeopardized. Decisions regarding diseases to be treated need to be made by investigators on scientific rather than financial criteria."

Report on RAC Review

The gene-therapy report was accompanied by another report commissioned by Director Varmus, this one on the Recombinant DNA Advisory Committee, known as the RAC, which reviews the protocols for gene-therapy trials.

Produced by a committee chaired by Inder M. Verma, of the Salk Institute, the report praises the protocol reviews for "helping to set appropriate scientific safety and informed consent guidelines." Moreover, the report stated, the RAC, "continues to be a credible forum for airing a wide range of public concerns about this emerging field of medical research." The principal recommendation called for the RAC to focus on protocols that depart from "familiar practice," and leave case-by-case review to the FDA, which has statutory responsibility for approval.

Several members of Varmus's advisory committee noted that the RAC focuses on safety and pays little attention to scientific quality. The response from RAC officials was that that's the way the committee, which includes non-scientist public members, had evolved.

The report of the Recombinant DNA Advisory Committee, 3 pp., is available from: Office of Recombinant DNA Activities, NIH, MSC 7010, 6000 Executive Blvd., Suite 302, Bethesda, Md. 20892-7010; tel. 301/496-9838; fax 301/496-9839.

Report and Recommendations of the Panel to Assess the

NIH Investment in Research on Gene Therapy (50 pp., no charge), order from: Tascon, Inc., 7101 Wisconsin Ave. NW, Suite 1125, Bethesda, Md. 20815; tel. 301/907-3844, ext. 250; fax 301/907-9655; Internet: <http://www.nih.gov/news>

area appears to be sufficient, in combination with a similar amount of industry's own money. But the move to therapeutic trials, which began five years ago, has been demonstrated to be premature, the panel report states.

Taking note of trials involving 597 patients and over 100 protocols, the panel reported that "clinical efficacy has not been definitively demonstrated at this time in any gene therapy protocol, despite anecdotal claims" of success. And, rare for a technical report on the management of research, the panelists focused on the possibility of unwarranted claims of progress leading to public disenchantment with research.

"Overselling of the results of laboratory and clinical studies by investigators and their sponsors—be they academic, federal, or industrial—has led to the mistaken and widespread perception that gene therapy is further developed and more successful than it actually is," the report states, adding that: "Such inaccurate portrayals threaten confidence in the integrity of the field and may ultimately hinder progress toward successful application of gene therapy to human disease."

Reiterating that theme, the report recommended "a concerted effort on the part of scientists, clinicians, science writers, research advocates, research institutions, industry, and the press to inform the public about not only the extraordinary promise of gene therapy, but also its current limitations."

Harmful effects of overselling are already showing up in the public, according to the co-chairmen of the 14-member panel, Stuart H. Orkin, of Harvard Medical School, and Arno G. Motulsky, of the University of Washington. Both told of patients harboring unrealistic expectations of treatment and of couples making risky reproductive decisions in the belief that gene therapy can repair birth defects. Candor was urged among those who treat and advise patients—with the implication that it wasn't always present.

The report said that clinical trials should continue, but

Study Urges Shifts in Handling Scientific Misconduct

The federal Commission on Research Integrity, assigned to bring clarity and predictability into the policing of misconduct in biomedical research, has produced a flock of recommendations, including a new and terminologically dense definition of scientific sin. The Commission also called for taking adjudicative power away from the Office of Research Integrity (ORI) and confining that troubled shop to investigations.

ORI, which works for the Department of Health and Human Services, operates under a 1989 definition that states: Misconduct or Misconduct in Science means fabrication, falsification, plagiarism, or other practices that seriously deviate from those that are commonly accepted within the scientific community for proposing, conducting, or reporting research. It does not include honest error or honest differences in interpretations or judgments of data.

Integrity and Misconduct in Research: Report of the Commission on Research Integrity (67 pp., no charge), order from: Office of Research Integrity, 5515 Security Lane, Suite 700, Rockville, Md. 20852; tel. 301/443-3400; fax 301/443-5351; Internet: <http://phs.os.dhhs.gov/phs/ori/ori_home.html>

The definition has been found satisfactory by the National Science Foundation (see *In Print*, P. 7), where the NSF Office of Inspector General deals smoothly and efficiently with the miscreants in its jurisdiction. ORI, on the other hand, has stumbled from one catastrophe to another, dropping cases to avoid defeat or losing them on appeal, and often looking dysfunctional—which is why Congress, in 1993, mandated creation of the HHS Commission on Research Integrity, with a high priority given to a redefinition of scientific misconduct.

The response to this assignment runs as follows:

Research misconduct is significant behavior that improperly appropriates intellectual property or contributions of others, that intentionally impedes the progress of research, or that risks corrupting the scientific record or compromising the integrity of scientific practices. Such behaviors are unethical and unacceptable in proposing, conducting, or reporting research, or in reviewing the proposals or research reports of others.

In a non-explanatory explanation, the Commission report says that the new "definition of research misconduct is based on the premise that research misconduct is a serious violation of the fundamental principle that scientists be truthful and fair in the conduct of research and the dissemination of results."

It adds that the "other practices" clause in the 1989 definition "has been heavily criticized by some members of the scientific community on the grounds that it might be used to punish creative or novel science." But it dilutes this objection by stating that "no case has occurred in which an agency has attempted to treat novel research as misconduct,

and definitions of this type, which appeal to standards accepted in certain professional groups without stating them, are, in fact, frequently used in federal regulations."

Without explicitly endorsing its own redefinition, though obviously favoring its creation, the Commission recommended that the HHS Secretary "encourage an interagency task force to develop a common federal definition of research misconduct and other forms of professional misconduct related to research." The recommendation is regarded with great wariness at NSF, which feels it has its misconduct problems under control.

The Commission, chaired by Kenneth Ryan, of Harvard Medical School, cannot be faulted for lack of industriousness, having held 15 meetings around the country between June 1994 and October 1995 in a quest to understand the complexities of discouraging, identifying, and punishing scientific misconduct.

The exercise produced several other recommendations, among them more attention to tutoring the young in proper scientific behavior, adoption of ethical codes by professional societies, and adoption of a "Whistleblower's Bill of Rights."

The recommendation for taking adjudicative power away from ORI notes that at NSF, investigations are conducted by the Office of Inspector General, which then presents its findings to the Foundation's Deputy Director, who evaluates the findings and renders a judgment.

The report takes brief note of what is perhaps the most important but least recognized factor in the management of scientific misconduct: whistleblowers ignoring the creaky procedures of the science establishment in favor of taking their grievances to court under the Federal False Claims Act, which entitles them to a share if grant money is recovered. Just a few science-related cases have gone this route so far, but in at least one case, the financial reward for whistleblowing has exceeded \$1 million.

Noting that data acquired in investigations conducted by universities have been used by whistleblowers under the False Claims Act, the Commission report urges the HHS Secretary seek to have the Act amended "because it serves as a disincentive for thorough institutional investigations."

Job Changes & Appointments

Thomas Price, Director of the Washington office of the Society of Automotive Engineers, took office last week as Executive Director of the American Association of Engineering Societies, succeeding Mitchell Bradley, who retired.

Bernadette Marriott, Associate Director of the Food and Nutrition Board at the Institute of Medicine, has been appointed Director of the newly established Office of Dietary Supplements Research at the National Institutes of Health.

Gregory E. Gardiner, of Pfizer pharmaceuticals, has been appointed Director of the Yale University Office of Cooperative Research, which is expanding its efforts to develop patents and licenses from research in campus labs.

In Print

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Infinite Energy: Cold Fusion and New Energy Technology (bimonthly; \$29.95 in US and Canada; \$49.95 for foreign orders), packed with claims of wondrous accomplishments that mainstream researchers have written off as infinite quackery in the guise of science. The impresario of the publication, 60 pp. in its latest issue, is Eugene F. Mallove, who writes that "at a bare minimum, it looks as though physics is due for a major overhaul."

Order from: Infinite Energy, PO Box 2816, Concord, New Hampshire 03302-2816; tel. 603/228-4516; fax 603/224-5975; e-mail: <76570.2270@compuserve.com>.

From the National Academy of Sciences, Board on Radioactive Waste Management:

Review of US Department of Energy Technical Basis Report for Surface Characteristics, Preclosure Hydrology, and Erosion (131 pp., no charge), finds shortcomings in the Department of Energy's thumbs-up report on the proposed Yucca Mountain, Nevada, site for permanent disposal of high-level radioactive waste. The Academy review, chaired by Ernest P. Smerdon, Dean of the College of Engineering and Mines, University of Arizona, Tucson, doesn't say yes or no on the suitability of the long-disputed site. But it says that the scientists who studied the site should have been identified and involved in preparation and review of the report; also, that the report should have been written for comprehension by the general public.

Order from: National Academy of Sciences, Board on Radioactive Waste Management, Room HA-456, 2101 Constitution Ave. NW, Washington, DC 20418; tel. 202/334-3066; fax 202/334-3077.

From the Association of American Medical Colleges (AAMC):

Women in US Academic Medicine Statistics, 1995 (10 pp., no charge), says women's applications to medical school have plateaued at 42 percent of the total over the past four years, but women ran slightly ahead of men in proportion of admissions. In 1994, 33 percent of all medical residents were women. But, reflecting the disproportions of the past, only 10 percent of women faculty members are full professors, while 31 percent of the men hold that rank. On average, says the report, there are only 16 female full professors per school, compared to 155 men.

Order from: Association of American Medical Colleges, Communications, attn. Betty Lou Atkins, 2450 N St. NW, Washington, DC 20037-1127; tel. 202/828-0542; fax 202/828-1123.

From the American Solar Energy Society (ASES):

Advances in Solar Energy: An Annual Review of Research and Development (560 pp., \$75 for ASES members, \$125 for others), reports on advances in the economic competitiveness of solar energy, studies of pollution hazards from solar cells containing cadmium, and an analysis of

photovoltaic reliability by the National Renewable Energy Laboratory, etc.

Order from: American Solar Energy Society, 2400 Central Ave., G-1, Boulder, Colorado 80301; tel. 303/443-3130; fax 303/443-3212.

From the Office of Inspector General (IG), National Science Foundation:

Semiannual Report to the Congress, No. 13: April 1, 1995-September 30, 1995 (71 pp., no charge), another inventory of delinquencies by NSF clients, including plagiarism, misuse of grant funds, sloppy bookkeeping, etc., none on a grand scale. The report also presents a strong defense of NSF's definition of scientific misconduct, which goes beyond the customary "fabrication, falsification, plagiarism" and proscribes "other serious deviation from accepted practices in proposing, carrying out, or reporting results from activities funded by NSF...." Countering claims that the deviation clause is too vague, the Inspector General argues that it is necessary "because it is impossible to predict the nature of all of the serious unethical conduct that might warrant agency action." Cited as examples that constitute misconduct are "tampering with a colleague's experiments, misrepresenting scientific qualifications or achievements in grant proposals, or violating the confidentiality of the peer review process." The IG says the NSF definition would stand up in court, and says that she is submitting an article for publication that "provides a detailed legal analysis of this issue." While NSF is standing by its definition of scientific misconduct, a panel appointed by the Secretary of Health and Human Services has recommended a new definition for HHS agencies (See P. 6).

Order from: Office of the Inspector General, National Science Foundation, 4201 Wilson Blvd., Arlington, Va. 22230; tel. 703/306-2100; fax 703/306-0649.

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In Print

Official reports and other publications of special interest to the research community

(Copies of publications listed here are available from the indicated sources—not from SGR)

From the National Academy of Sciences (NAS):

National Science Education Standards (262 pp., \$19.95, plus \$4 for shipping), in preparation since 1991, the final version of what is described as "the nation's first comprehensive standards to improve science education in grades K-12." Basically, they outline what students should understand at various grade levels, e.g., by fourth grade, the properties of objects and materials and the life cycles of organisms. Standards are also stated for teachers and for assessing progress. Available to state and local education systems for adoption on a voluntary basis, the standards pack a great deal of influence because of the broadly based consultative process that went into their development, with the backing of NSF, NASA, NIH, the US Department of Education and private foundations. Having distributed some 40,000 copies of a draft version for fine tuning last year, the Academy now plans a year-long promotion effort in education systems throughout the country. Local contacts are listed in an accompaniment to the report. The standards project was chaired by Richard Klausner, Director of the National Cancer Institute.

Order from: National Academy Press, 2101 Constitution Ave. NW, Washington, DC 20418; tel. 1-800/624-6242 or 202/334-3313.

From the Science Policy Research Division of the Congressional Research Service (CRS), part of the Library of Congress, no charge:

Abortion Procedures (95-1101 SPR, 6 pp.), summarizes the most recent anti-abortion bill passed by Congress, the "Partial-Birth Abortion Ban Act of 1995" (HR 1833), approved by the House November 1 and by the Senate (S 939), in slightly modified form, December 7. The bill, which the President says he will veto, applies to "an abortion in which the person performing the abortion partially vaginally delivers a living fetus before killing the fetus and completing the delivery." Penalties would include fines and imprisonment. The report, by Irene E. Stith-Coleman, states, "Little, if any information has been published in the medical literature about the procedure," but says the National Abortion Federation has provided information about two physicians who "collectively perform 450 such procedures annually."

Environmental and Tobacco Smoke and Lung Cancer Risk (95-1115 SPR, 75 pp.), examines various studies investigating health effects of environmental, or second-hand, tobacco smoke, and finds flaws in their design and conduct and little reliable evidence of deleterious effects. The report is by C. Stephen Redhead and Richard E. Rowberg.

Overview of US DOT's [Department of Transportation] Safety Programs, Budget, and Issues (95-1060 SPR, 12

pp.), reports no sensible relationship between DOT's expenditures on safety and the scale of the risks they address. The report calculates DOT's safety-related expenditures, including research and development, at \$2.3 billion, including \$836 million on highway activities, \$649 million on aviation, and \$717 million on marine-related activities, such as design of off-shore structures and licensing of merchant personnel. If funds were allocated according to the "relative number of deaths that occurred in a mode," the report states, highways would receive \$2.1 billion, aviation \$58 million, and marine safety \$47 million. The report notes that proportionality isn't necessarily a proper guide in allocating the funds, but it leaves the impression that shares and risks are out of line.

Order through a House or Senate member. Senate switchboard, 202/224-3121; House, 202/225-3121. Cite the Congressional Research Service as the source, with report title and number.

From the Society for Industrial and Applied Mathematics (SIAM):

The SIAM Report on Mathematics in Industry (34 pp., no charge), concludes from a survey that many mathematicians find satisfactory employment in industry and other areas outside of academe, but says many felt they would have benefited from exposure to practical applications as part of their training. The report, by a steering committee chaired by Paul W. Davis, Worcester Polytechnic Institute, cautions against regarding industrial jobs for mathematicians as a poor second-choice in a weak academic job market. "Nonacademic applications offer opportunities not simply for mathematicians to solve practical problems," the report states, "but to enrich and deepen mathematics as well as a variety of other fields, including science, engineering, medicine, and business." The study was supported by the National Science Foundation and the code-making and -breaking National Security Agency, a major employer of mathematicians.

Order from: SIAM, 3600 University City Science Center, Philadelphia, Pa. 19104-2688; tel. 215/382-9800; fax 215/386-7999; e-mail <siam@siam.org>; also available on the World Wide Web: <<http://www.siam.org/mlirep.htm>>.

From the American Association of Engineering Societies (AAES):

Engineers: A Quarterly Bulletin on Careers in the Profession (\$15 for members of AAES affiliates; \$25 for others; add \$10 for foreign orders), report on the ups and downs of employment prospects, immigration of engineers, legislative developments affecting engineering, etc.

Order from: American Association of Engineering Societies, 1111 19th St. NW, Suite 608, Washington, DC 20036-3690; tel. 202/296-2237; fax 202/296-1151.

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The next issue of *Science & Government Report* will be published January 15, 1996.

